Benefit Cost Analysis for Surface Engineering Solutions Funded by SERDP/ESTCP Weapons, Systems & Platforms Program Area

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Sustainable Surface Engineering for Aerospace and Defense
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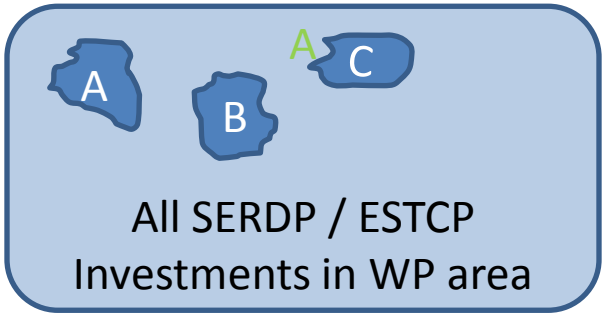
Objectives of Benefit Cost Analysis

- Select for analysis a subset of WP sponsored technologies (A, B, & C) which have transitioned from R&D and DEMVAL to certification and implementation



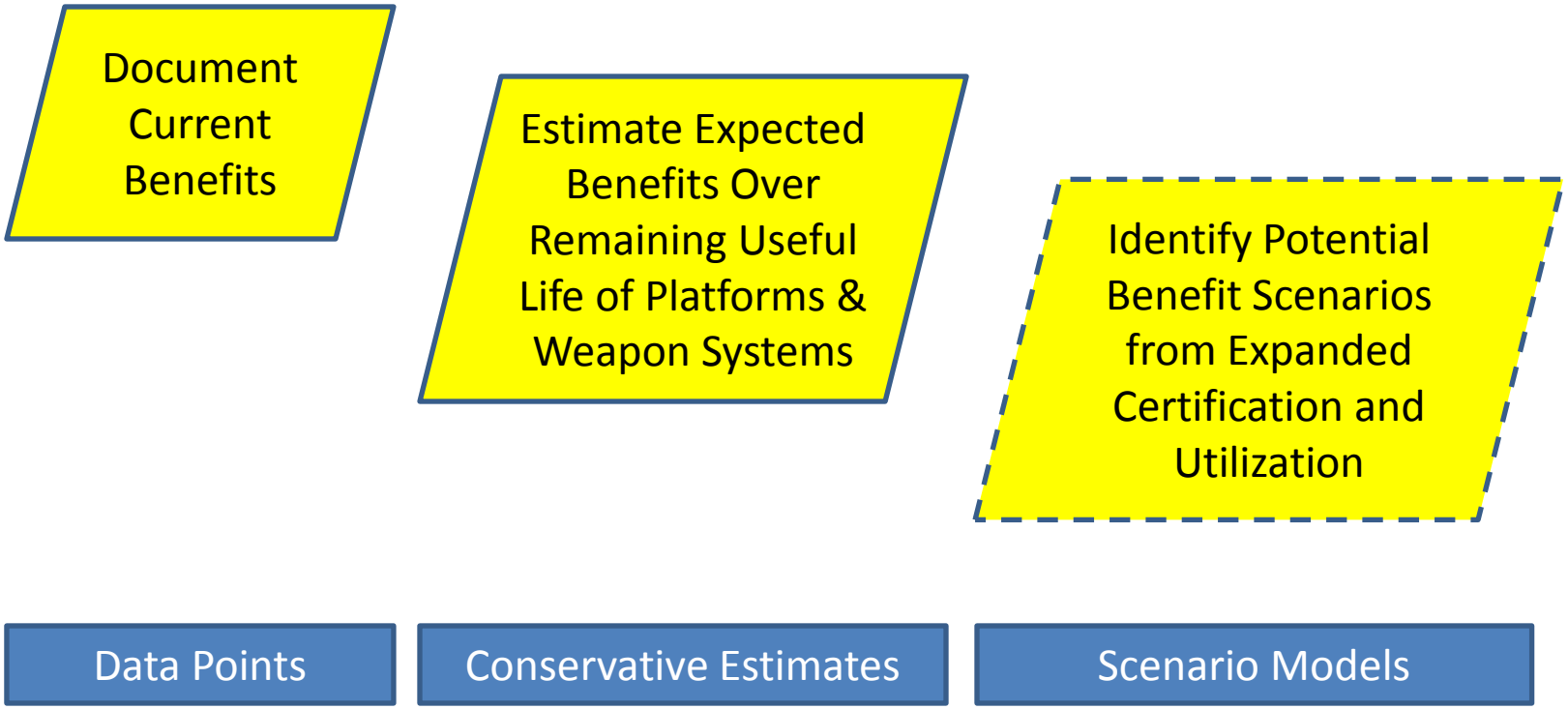
- Identify DOD benefits from selected technologies and the associated investments by SERDP / ESTCP and other funding sources. Document & quantify DOD benefits and compare to investments
- Derive lessons learned for future technology transition efforts

DOD Benefits of Interest

- COST: Reduced system lifecycle costs from manufacturing to ultimate disposal
- ENVIRONMENTAL RISK: Reduced environmental risks in manufacturing and maintenance depot operations
- TIME TO RESOLUTION: Reduced time to resolve environmental problems
- READINESS: Protect platforms and weapon systems from environmental degradation. Enhance / sustain military readiness

DOD Benefits of Interest (Cont.)

Identify realized benefits. Estimate future and potential benefits



Analytical Approach

- Identify and recommend promising WP research areas for benefit cost analysis.

- For selected WP research areas
  - What is state of science and technology with and without WP investment?
  - What pathways were used for technology maturation and adoption?
  - Are there additional pathways that could lead to further DOD deployments and benefits?
  - Identify DOD benefits in cost savings, environmental risk reduction, and readiness. Quantify these benefits when meaningful. Analyze alternative scenarios for expected future benefits.
  - If there were multiple funding sources, develop fair attribution scheme.

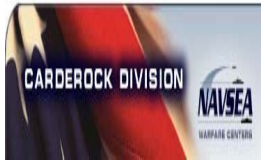
Selection Criteria for WP Investments to be Analyzed

- R&D and DEMVAL completed
- Certification achieved
- Implementation achieved or high likelihood

- Significant DOD impact
  - Large magnitude of realized and expected benefits
  - Large scale utilization: Touching extensive platforms and weapon systems
  - Touching mission critical platforms and weapon systems, etc.

- Other significant impact, including
  - Dual-use commercial impact
  - Impact on collaborative manufacturing operations with NATO allies, etc.

Current Analytical Approach Was Successfully Used as Tasked by DOD, DON, DOE & NIST



Some Examples: Utilizing Current Analytical Approach

- For ONR & NSWCCD: Benefit cost study of research investments in advanced computational fluid dynamic (CFD) techniques - in support of hydrodynamic model testing. Benefits included reduced drag, reduced fuel consumption and smaller environmental footprint for CG, DDG, LHD, and LSD class surface ships
- For DOE / EERE: Benefit-cost evaluation of 30 years of R&D investments in the U.S. Wind Energy Program. Increased efficiency levels, reduced energy costs and noise levels
- For NIST: Benefit cost study of research investments in green manufacturing technologies with applications in non-ferrous metals recycling and plastics production from biomass
- For ONR & NUWC: Benefit cost study of research investments in the development and fielding of Air Independent Solid Oxide Fuel Cells for UUVs. Performance gains, cost savings, and zero emissions
- For ONR & NAWC-WD: Benefit cost study of research investments for the development and fielding of high performance optical components for missile domes in the AIM-9X Sidewinder, Standard Missile Block-2 IIIB, Evolved Sea Sparrow Missile (ESSM), ATFLIR and Test Range Metrology

If you have questions, comments or suggestions for WP Benefit Cost Analysis project, please contact

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